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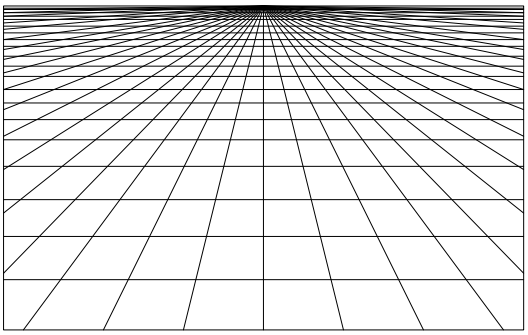

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Neither Rights nor Duties - Constructing Passages for Cyclists in Norway

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Abstract

This thesis examines the position cycling has in Norway as a mode of transport. Better conditions for cycling can lead to more people cycling and help making our mobility system more sustainable. The last few years there has been more focus directed at the positive effects of cycling in Norway, therefore more attention is given to accommodate the bicycle in the city traffic. The expectation is that constructing and improving cycling infrastructure will lead to more cycling.

The national goal is for cycling to become safer and the share of bicycle traffic to increase. In what way this goal is being pursued and in what way it best can be reached is this thesis' main focus and the arguement is that to improve the conditions for cycling in Norway, only focusing on the constructing of infrastructure is not enough. Cultural aspects and the way the city landscape is designed is also important aspects to consider.

Keywords

Mobility, Sustainability, Cycling, Passages, Transport policy

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1. A Sustainable Mode of Transport

1.1 Introduction:

The growth of mobility and the high dependence on cars have negative consequences for the environment, as well as for people's health and quality of life. The non-renewable sources of energy lead to increasing pollution both locally and globally. Traffic accidents, congestion and noise are other serious problems that add to the social costs of transportation. The need for change towards a more sustainable mobility system is getting more and more important.

In a city this means considering new ways to plan urban transport. It is important to not only focus on developing environmentally friendly personal transport, but to think of new ways to improve the whole system of mobility. This is necessary where lack of space, noise and congestion are common problems as well. Trips undertaken through the use of sustainable modes of transport such as walking or cycling can replace many of those trips currently made by car, but the successful use and promotion of these modes are hindered by increases in danger and trip length, poor facilities, the social structure and surrounding environment. "Sustainability of urban life" must be fostered with an increase and acceptance of non-polluting modes of transport (Tolley, 1990, p. 8).

The last few years there has been more focus directed at the positive effects of cycling in Norway. In 2003 the government formulated the National Cycling Strategy, part of the national transport plan, which aimed to make it safer and more attractive to use a bicycle as a mode of transport. The city of Oslo is currently improving the main bicycle path network to reach a goal of 12 % bicycle use by 2015. Here car traffic is the main source of air pollution and only about 6 % of journeys are being made by bicycle. The expectation is that

constructing and improving cycling infrastructure will lead to more cycling so consequently this is where the resources are being invested. Much can be gained by providing better infrastructure for bicycles therefore getting more people to start cycling, but this is certainly not enough. Promoting cycling through a wider range of approaches is also important and innovation in this regard is necessary. Accomodating the traveller, not only the mode of transport is an example. Giving more attention to cultural aspects affecting the conditions for cycling and employing negative measures to decrease the use of motorized vehicles is vital.

By looking at Norway and its capital city, Oslo, I will study what is being done to improve the conditions for cycling in a society where this has been neglected for a long time due to a lack of appreciation and acknowledgement of the bicycle as a means of transport. Cycling in Oslo can be pretty difficult but making it easier to ride a bicycle is difficult too, especially in a mobility system that has long developed without including cyclists. Sustainability of an urban mobility system can be increased by improving conditions for cycling. Policy makers, designers of bicycle infrastructure and the cyclists themselves are all actors trying to solve the problem of cycling in a city. How this task is approached and where it fails will be the focus of this thesis. I will examine the problems they encounter, how they go ahead in solving them and in what way they can be solved better. My research question can be summed up as:

- In what way is the goal of improving the conditions for cycling being pursued in Norway and in what way can this goal best be reached?

1.2 Sustainable mobility

The concept of sustainable development has become much more prominent on policy makers' agendas since the publication of the Brundtland Report of the World Commission on Environment and Development in 1987 and the Earth Summit in Rio de Janeiro in 1992. The

Rio conference called for a new development policy, which was consistent with sustainable development and urged policy makers to implement a kind of development that is compatible with the Brundtland's commission's definition of the concept, namely a development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). Motorized transport is closely connected to the problem of our unsustainable world. The connection between emissions from motorized vehicles and the environment is clear, the pollutants from cars, planes and other motorized traffic have significant negative effects on the health of humans and nature. The growth in the volumes of motorized transport accounts for an increasingly bigger proportion of the air pollution but also deteriorates nature and urban space with noise, demand for space, social exclusion and finally contributes to global warming.

With higher awareness of the negative impacts our mobility system has on the environment and society, the search for sustainable personal mobility looms higher on the policy, research and business agendas as well. In the last few years there has been an escalation in the development and use of new technology in relation to making personal transport more environmental-friendly. In Sweden about 13% of the cars sold so far this year run on alternative fuels like ethanol and biogas. In Norway a hydrogen energy infrastructure along a route of 580 kilometres from Oslo to Stavanger is planned to be completed by 2009 and to be linked with Denmark and Sweden by 2012. And newspapers are full of information about fuel cells, hybrid and electric vehicles, intelligent transport and so on.

The belief in a "Technological fix" is the belief that all problems, even social ones, have technological solutions. The atomic physicist Alvin M. Weinberg questioned whether there were some problems that could not or should not be fixed by technology. He used the concept

Technological fix to describe the use of technology in situations where problems traditionally were addressed by political, legal, organizational, or other social processes (Weinberg, 1966). A trust and belief in technology might originate in a reluctance to do anything with the problem here and now. It is undoubtedly easier to push the problems ahead of us and hope that new technology will solve them without us having to sacrifice too much. Investing in research and science that can lead to transport that is better for the environment is important, but this focus must not be chosen at the sacrifice of more present day, down to earth kind of solutions. Trust in technology should not be an alternative to pursuing the more difficult strategy of changing social attitudes. A combined effort of better technology and measures to decrease car use is needed to achieve a reduction in CO2 emissions from transport.

By focusing on social factors contributing to the characteristics of our mobility system or more specifically the role of cycling within it, I place my self in the field of science and technology studies (STS)[1]. This field developed as a reaction to the way technology commonly was, and often still is, viewed; namely as a "key governing force in society" (Smith, 1994, p. 2). Such technological determinism view technology as an independent factor, formed independent from society, but with great impact on our lives; determining cultural values, social structure, history, and so on. STS scholars argue that society and technology co-evolve and affect each other. Social construction of technology (SCOT), one branch of STS, especially emphasize that it is human action that shapes technology and not the other way around.

Technology is closely related to mobility. Perhaps that is the reason why transportation is quite a common subject in the field of science and technology studies. SCOT was developed

[1] STS are also referred to as studies within Science, Technology and Society.

by analysing the innovation processes leading to the closure in the modern bicycle (Pinch & Bijker, 1987). Actor network theory, another approach within STS was developed with the use of case studies of the failure to build a light electric vehicle in France (Callon, 1986), and of how the Portuguese navigated their sea vessels over long distances in the fifteenth and sixteenth centuries (Law, 1987).

To change our unsustainable mobility system we must understand that we can influence change. "The view that technology just changes,..., promotes a passive attitude to technological change, it focuses our minds on how to adapt to technological change, not on how to shape it" (MacKenzie & Wajcman, 1999, p.5). Our social world; our behaviour, culture, attitudes, practices and habits affect the development of our mobility system. This is part of the reason why I think the field of STS has a lot to contribute to the study of sustainable mobility. Furthermore, environmental policy as an object of study requires an interdisciplinary perspective (Biermann, 2002), and an interdisciplinary[2] approach is the hallmark of STS.

Sustainability and transport is not the most widespread topic within the field of STS, but has become more common. There is a collection of integrative studies focusing on socio-technical change and transition, at the level of societal functions such as sustainable mobility (Geels, 2002; Kemp, Rip & Schot, 1998). Moreover, attempts to apply insights from STS to policy decisions about the development and management of technological innovations have resulted in policy tools such as strategic niche-management, which can be used to manage technological innovations in transportation (Hoogma, Kemp, Schot & Truffer, 2002).

[2] Studies with an interdisciplinary approach make use of and integrate insights from more than one academic discipline.

When it comes to sustainability and green modes of transport and studying mobility in a more travel oriented way there is even less to draw from, but Peter Frank Peters book, "Time, Innovation and Mobilities – Travel in technological cultures" is a recent contribution. He has developed a conceptual framework to study contemporary travel practices and evaluate strategies of innovation. Central to his argument is the role of design in relation to transportation systems and practices of mobility; problems can be identified as dilemmas and reformulated as questions of design. Peters' approach is an important contribution to how we view mobility problems and offers important insights to this thesis' topic: how can we improve the conditions for cycling. A further elaboration on Peters' framework will be given below, in section 1.5.

1.3 Cycling as part of the solution

In his book "End of the Road", Wolfgang Zuckermann asks:

> "What is it that prevents us from even realizing that there is a problem with cars?" (…) "The fact that motorcars have undergone very few changes in a hundred years has allowed us to get used to them and take them for granted like an old, comfortable pair of shoes. We rarely question what they actually do to us, how they should be designed to fit into our delicate world, or what they cost us in money terms, let alone in other ways" (1991 p.74).

In the 15 years that has passed since Zuckermann wrote his book, we still drive our motorized vehicles, in fact the volume of traffic is even bigger. This dependence on cars is fundamentally inconsistent with the demands for sustainable development. So far the promises of more environmentally sound vehicles are indeed about getting them polluting *less* and we should not forget motorized traffic's other disadvantages either; the noise, the dust, the occupied space and the thousands of people killed every year. Technical fixes alone will not suffice to curb transport's negative consequences; we have to make use of other measures and a wider range of efforts to reach the goal of a more sustainable society. However, it has

gradually become more common to question the use of cars and look for different and perhaps more painful solutions as well.

Giving much more priority to cycling is an excellent way of starting to reverse the many unsustainable trends in transport. Cycling, together with walking, is the cheapest, easiest, and most environment-friendly means of getting somewhere and along with the focus on sustainable development its benefits have gradually gained more attention as well. Efforts are being made to increase the use of bicycles in various countries and cities as well as on a supranational level. Denmark and the Netherlands are nations that lead the way by example. Bicycle traffic amounts to about 28 % of all travel in the Netherlands and 18 % in Denmark, the share in most other western European countries is 5-10 % or even lower. Cities with a modal share of cycling of 30 % and above include Copenhagen, Groningen and Münster[3]. The European Conference of Ministers of Transport (ECMT) agreed on a Declaration on National Cycling Policies in 2004, that "recognizes the importance of cycling policy as an integral part of a national policy framework for sustainable travel in cities" (ECMT, 2004, p. 3) and the European Union also recognize cycling's importance. The European commission published a handbook "cycling: the way ahead for towns and cities" in 1999 with the aim of correcting the long held prejudices concerning the use of bicycle as a regular mode of transport in the urban environment (Dekoster et al., 1999).

Reasons for promoting the use of bicycles are many. The bicycle is efficient, non-polluting, healthy, environmentally- and user friendly and therefore more cycling has more positive effects on the environment, health, urban quality of life and sustainable development. Levett lists more specific ways this green mode of transport has sustainability benefits. First, a modal

[3] It is difficult to obtain cohesive cycling statistics as different methodologies and definitions are used.

shift from cars to bicycles reduces resource depletion and pollution without offsetting increases in traffic. Second, cycling improves the local environmental quality, through safe streets, new public spaces and urban vitality. Third, cycling gives pleasure in both utility and recreational travel. Fourth, cycling means higher fairness in access to amenities and fifth, cycling means job creation, in route construction and maintenance and tourism (Levett, 1996, cited in McClintock, 2002, p. 8). In addition, cycling has great potential for improving personal and public health. Today, physical inactivity represents one of the greatest risks to public health in industrial countries. Improving people's health is sustainable development.

Getting more people to cycle is a complicated task which not only involves practical or technical solutions but also changing individual behaviour and societal characteristics. To succeed with such an assignment innovation is needed. But for innovation to succeed it is necessary to find new ways of researching/conceptualizing cycle politics and design. This will be elaborated on in the next section.

1.4 New ways of researching/conceptualizing politics and design in relation to cycling

Transportation is not only about getting from one point to another, but involves somewhat abstract concepts like time, space, and movement, which have other meanings today than before the development of modern transport. Places that once were an hour away can now be reached in five minutes. It is the link between space and time that creates distance and when the relation between time and space changes so does our comprehension of distance. At the beginning of the 1900 for example, a trip from Dalen in Telemark to Oslo took about two

days and two nights, first with a steamboat and then with a train. Today the trip takes a bit more than four hours with a car.

Another central concept related to transportation and travelling is speed, a value laden word in our society. Our comprehension of speed is relational, to say that someone travel fast does not tell us much unless it is compared to someone travelling slower. Speed is not solely an inherent characteristic of different travel modes. A car is not fast merely because of its technical qualities, but also dependent on the surrounding environment to enable and warrant the possibility to travel at a certain speed. By guaranteeing the speed for a car the car driver is given time, while another traffic participant might loose time as a consequence.

In the book Time, Innovation and Mobilities – Travel in technological cultures, Peter Frank Peters argues that travelling is not only about getting from A to B, but that the travel itself is important and an integrated part of everyday life. By analysing and studying 'mobilities' as practices of travel Peters' aim is to provide "a pragmatic understanding of the way people actually travel in order to open up new perspectives on both mobility innovations and on the study of travel in technological cultures" (Peters, 2006, p. 1). To do this he introduces a new vocabulary for analysing travel in technological cultures and develops new concepts to evaluate mobility innovations. This is done by researching how problems can be identified as dilemmas and transformed into problems of design.

A central concept in this vocabulary is 'passages' which Peters contends must be constructed in order to travel. A passage is duration as well as a way through, "the word passage simultaneously refers to a span of time, the passing of time, and a space that is traversed" (p. 69). Travelling, in whatever way, means actively constructing passages that generate a

situated relation between time and space. Thinking of travel as such an active construction of passages can be done in different ways, something which Peters explores in his book.

First passages are described as heterogeneous orders assuming both material and discursive elements. Riding a bicycle for example depends on more than the cyclist. The surrounding environment and the society in which the cycling happens is also important; both material elements like the cycle lanes, junctions and other traffic, and immaterial elements such as the mobility culture, the traffic rules and the interaction between the different traffic participants, affect the way the cyclist travels through the city. The passage the cyclist makes use of is heterogeneous and complex. The various entities in a mobility system are arranged in such a way that a situated relation between time and space is produced. The arrangement of the different elements surrounding a traveller in the traffic system form a passage which he/she makes use of when walking, cycling or driving. At an intersection, for instance, a traffic light gives way to some while others are demanded to wait. Because the space is contested, the travellers are separated in time.

Following Peters further; passages are also both planned and contingent. Passages for cyclists can be designed and made in advance by politicians and designers of bicycle infrastructure, but passages are " also continuously confirmed or changed in the real-time activity of travelling" (p. 70). You can never plan your journey perfectly beforehand because disruptions might always happen. A cyclist racing down the bicycle lane in the street "Ullevålsveien" in Oslo, for example, might suddenly find a car parked in front of him/her – then what? Although the passage for the cyclist was planned in advance it now becomes necessary to change the planned route and the cyclist has to make a choice of how to proceed. To describe how planned orders of passages are repaired at the moment a disruption occurs, Peters

introduces the term ‘exchange’. To be able to solve emerging problems in the traffic system traffic participants must have a certain amount of exchange at their disposal (p.122). Cyclists can make use of experience, skills, the width of the road, the bicycle’s qualities etc.

Finally, passages can be described as being inclusive and exclusive when it comes to people, places and moments. The traffic system that has developed in Norway is not the same for everyone. People who do not drive a car for instance do not have the same possibilities as car drivers to travel to or at certain places.

People travel in both space and time, travelling is not just a means to get to an end. Peters asserts that “if we want to speak about mobility innovations in a language game that not only contains notions such as ‘acceleration’ or ‘breaking’, it is necessary to study how passages are created, maintained and justified in concrete practices of transit, and what their consequences are” (p.72). This is precisely what I aim to do in this thesis, therefore I will use this framework when analysing the situation of cycling in Norway.

1.5 Method

I have chosen to focus my research on the conditions for cycling in Norway, which makes this study a single-case study. But because this is as much a local as a national concern and responsibility I am using the city of Oslo as a “case within the case” to best demonstrate the different aspects of the question. Improving the conditions for cycling is very much up to the local level and it is in cities and towns that cycling has a real chance to compete with the car. Ownership and responsibility of the roads in Norway are divided between different levels of government and therefore cooperation is crucial. Norway is a country of just above 4.6 million people and Oslo is the country’s largest city of almost 550,000. Cycling’s share of all

travel is about 4% on a national scale with Oslo's share being a bit higher. This thesis is an overall analysis of the Norwegian political and cultural situation regarding cycling. By looking at a case within a broader perspective it becomes fruitful to examine ground level consequences of political, cultural and technological change.

A case study approach was preferred due to the nature of the research question. As I pointed out in the introduction, my aim is to examine in what way the goal of improving the conditions for cycling is being pursued in Norway, and in what way this goal best can be reached. To answer this question, empirical data was mainly gathered through interviews and by analysing documents, but I also used more informal sources of information such as web sites and simply talking to people on the streets. My approach to answering my research question has been quite broad as I soon realised there were many reasons for cycling's poor conditions in Norway. Therefore I have approached the case from different perspectives; political, user and design, and by using different empirical sources and methods

By conducting interviews I obtained information about the case from six people working with questions concerning cycling. They helped me with information on all aspects concerning the case; the historical and current status regarding cycling policies, design of infrastructure and user perspectives. The informants I used represent different perspectives and interests, and were from the municipality of Oslo, the Norwegian National Cycling Association and the different levels within The Norwegian Public Roads Administration.
All the interviews were carried out the same week in May, lasted between 30 minutes and one and a half hour and were semi-structured. I used an interview guide as a free-hand map to the conversation, which was used to steer the conversation and structure my questions, but still gave the freedom to explore unanticipated topics (Rubin & Rubin, 2005, p. 147).

There are quite few people working with questions concerning cycling and with much knowledge about this task. Therefore, choosing interviewees was quite easy as there were not that many to choose from. I was also considering interviewing cyclists, which would have been a good way to learn more about their role in traffic etc. But I had to limit my research and instead I interviewed a representative from the national cycling association and used earlier research to get hold of information.

It is particularly difficult to uncover cultural aspects and attitudes in the society, even by doing extensive research such information is difficult to obtain. Therefore, to be able to say something about this I made use of more informal methods such as reading through various discussion forums on the internet, talking to people and of course by cycling a whole lot in Oslo. I could not have written this thesis without first hand knowledge of the situation; cycling in Oslo has given me valuable insights.

1.6 Structure of thesis

This thesis looks at the problem of unsustainable mobility and presents cycling as part of a solution. Increasing cycling's share in the mobility system depends on various factors. This will be demonstrated by presenting the problem related to cycling from three different viewpoints – politics, the activity of cycling and design.

These are all important factors influencing cycling's role in a city. I start off with the political perspective in relation to cycling in chapter two; recent developments of cycling policy on both national and local level are presented. In chapter three the focus is on the cyclists' perspective; here cultural aspects and the cyclists' role in the traffic system are important.

Chapter four studies the design perspective in relation to cycling; central is the design of cycling infrastructure and the political character of different design solution. Finally, these perspectives are viewed in comparison in chapter five; the role of innovation in order to improve the conditions for cycling is important.

2. Cycling on the Agenda

2.1 Introduction

This chapter examines the development of politics regarding cycling in Norway; what has traditionally been done to improve cyclist's condition and especially what is currently done. Along with greater international attention to cycling, the politicians in Norway have understood that improving the conditions for cycling is good for the environment, health and so on, but the way they go ahead to improve cyclists' passages is important for the quality of the results. In order to improve the conditions for cycling politicians have an important role to play.

There are basically three classes of roads: national roads, county roads and municipal roads. The political ownership and economical responsibility of these roads belong to different levels of authority which means that cooperation between the national and local level is essential. The political attention to cycling varies a lot on local level, but is very important when it comes to improving conditions to cycling. I will first go through the Norwegian bicycle policies on a national and local level and then compare these two approaches, before I say something about how policy makers current approach to cyclists' conditions can be improved.

2.3 The cycling policy on national level

Mobility and cycling policy in Norway

For a city to succeed in the promotion of cycling, national-level commitment can be very important, both the Netherlands and Denmark have had a high commitment to cycling and

this has at least in part been the reason for their high modal share of cycling. A focus at national level helps in setting the right legal, regulatory and financial framework so that initiatives aimed at bettering the conditions for cycling can succeed (ECMT, 2004).

Such a focus has gained increased importance in Norway which both policy statements and practical consequences bear witness to. It is a national goal to increase bicycle usage and a broad political agreement about improving the infrastructure and facilities for cyclists. Money is being allocated and the subject now gets a lot of attention politically as well as in the media. Both the current and the last government have shown that they want to do something about the situation. The minister of transport and communication in the previous centre-right Government, Torild Skogsholm, was politically active and contributed to cycling becoming a priority in the National Transport Plan 2006-2015 (NTP) and the Prime Minister of the current centre-left Government, Jens Stoltenberg, is known as an active cyclist and went to elections saying he wanted to improve bicycle infrastructure, especially in Oslo (Kornberg, 2006).

With a low population density and diffused settlement the negative impact of transportation might be smaller in Norway compared to other European countries. The level of congestion is small and only exists in two or three of the biggest cities and at peak hours, and the number of accidents per million inhabitants is among the lowest in Europe. Nevertheless, environment and health problems caused by transport still represent a major challenge, a challenge policy makers have long neglected. In accordance to Knutsen & Boge, Norway has not been able to combine high traffic safety with an active consideration to the environment and did not get a specific city policy until the late 1990s (2005, p. 340).

After the Second World War the system of roads was in a very bad condition, mostly because little had been invested in infrastructure and because cars still were rare. In the 1940s and 50s the bicycle's share of all trips was high; there were still few people with the possibility to own a car. But gradually motorized vehicles became more popular, and after the car rationing policy was lifted in October 1960 they were also easier to get hold of. Between 1960 and 1970 the numbers of private cars went from 225,000 to 748,000 and continued to rise, in 2000 there were 1,851,929 cars in Norway (Knutsen & Boge, 2005). Building infrastructure to support the steady growth in traffic and the new and modern lifestyle was such a great task that no wonder bicycles were left out of the plans. In the following years fewer cyclists were to be seen on the road and in 2001 the bicycle's share was only 4 % in Norway. There are few earlier studies showing these kind of numbers, but a travel survey for Oslo shows that 31% walked, cycled or used a moped in 1961 (Nasjonal sykkelstrategi, 2003, p. 22).

With the growing number of cars in the 60s and the 70s the number of traffic accidents also started to rise and there was a need to do more to protect other traffic participants. That is probably the reason why a traffic law was passed in 1978 stating that: "cycling on foot-paths, sidewalk or in pedestrian streets is allowed when the pedestrian traffic is small and cycling does not cause danger or is in the way of pedestrians; such cycling must happen with appropriate distance and in approximately walking speed when passing pedestrians".[4] It is likely that this law contributed to the slow development of bicycle policies and attention to this group's special needs. Cyclists were put in a group together with pedestrians, often referred to as "soft road users", which lead to cyclists being given low priority as a separate transport group. Such a tendency to view these traffic users together ignores the great

[4] My translation

difference in their respective scale and way of moving, as well as the significant difference in journey length (Ramsay, 1997, p. 217).

In the 70s, attention was given to constructing "foot and bicycle paths" along the national highways. The heavy growth of vehicles from around the 1960, together with a strong centralization lead to an increase of traffic density in and around cities and towns and this situation demanded action, especially to make it safer for kids to get to school. Since then about 3000 kilometres of foot and bicycle paths have been build in connection to the highways and the remaining need is calculated at 1850 km (Nasjonal sykkelstrategi, 2003). But little attention has traditionally been given to improving infrastructure for bicycles in cities and helping cyclists obtain a separate role in traffic.

However, a policy change started gradually at the end of the 1990s. Viewing cyclists as a separate transport group and the bicycle as a mode of transport has become a stated goal. Consequently more focus has been put on planning continuous main cycle path networks in cities and the benefits of cycling have gradually gained more attention. Trond Berget, the leader of the national cycling association, puts it this way: "Our task has not changed much, the association is almost 60 years old and it is interesting to see that the problems we addressed in the first bicycle magazine we published are the same as today (see "Vi syklister" no. 1, 1947). We are working with the same thing; the difference is that we to a larger extent are being heard today or that it is higher on the political agenda"[5].

[5] Interview with Trond Berget, leader of the Norwegian national cycling association

The national cycling strategy

In 2001 the Norwegian parliament, Stortinget, asked the Government to formulate a National Cycling Strategy aimed at making it safer and more attractive to use a bicycle as a mode of transport. To follow up this ambition the following intermediate goals were presented:

• The risk of fatalities or permanent injuries from road accidents is not to be higher for a cyclist than for a motorist.
• The share of bicycle traffic in "bicycle towns" (towns opting to facilitate cycling) is to increase by 50%.
• Bicycle traffic in Norway is to comprise at least 8% of all travel (out of the total number of trips).

The strategy is part of the national transport plan 2006-2015 and is the first document that put special focus on cycling at the national level. The Norwegian Public Roads Administration (NPRA) was responsible for the final draft, but it was made in collaboration with the Directorate of Health and Social Affairs, the Norwegian Association of Local and Regional Authorities and the Norwegian National Cycling Association.

The strategy goes through a series of challenges and subject matters concerning cycling and tries to advise on further policy action. In the previous chapter I mentioned different benefits of cycling and reasons for promoting bicycle use. The National cycling strategy lists three main reasons to why more people should cycle; health, environment and socio-economic benefits. The main focus is on health or the fact that cycling leads to better health: "The best method to achieve a full health effect from physical activity in the population is to include physical activity in daily routines and active transport is a simple way to achieve this"

(Nasjonal sykkelstrategi, p. 17). The focus on health is in general the most important reason used by policy makers when explaining the need to promote cycling. This is probably because this is perceived as an argument that the public will comprehend and possibly take into consideration. However, some is also written about the environment. First, that the environment in towns and cities deteriorate with a lot of car traffic and that pollution, noise, accidents and barriers contribute to a reduced quality of life. Second, that short trips by car are particularly polluting. Third, that cycling saves space and in the end, that arranging for cycling in a city can be an important contribution to a better urban environment. Finally, the strategy states that facilitating more cycling has great socio-economic benefits and points to a study conducted by the Institute of Transport Economics that calculates that investments in a continuous bicycle path network will yield a net benefit of over three times the cost for the three towns included in their study (Sælensminde, 2002). It is pointed out that other measures like safer crossing facilities must also be implemented and that the specific design of the network is not included.

The cycling strategy focuses on the bicycle as a means of transport and states that the greatest potential for increased cycling is in cities and towns. Most importantly, the document shows that there is political will and an attempt to do something to improve cyclists' conditions. This is a step in the right direction for increased bicycle use in a country where cycling has long been marginalised. Off course, all this must be followed up with action if the goals are to be achieved, a responsibility primarily given to the NPRA.

The role of the Norwegian Public Roads administration

Along with the development of the national cycling strategy the Directorate of Public Roads was asked by the Ministry of Transport and Communications to start incorporating its policy

into the agencies[6]. The NPRA is given a particular responsibility to initiate and coordinate the work to increase the use of bicycles, spread general knowledge about how to accommodate for cycling and generally be a driving force (NTP, 2004, p.97). The main task is building infrastructure for cycling and to work towards the achievement of the goal of getting more people to cycle, while at the same time improving the traffic safety. The NPRA is responsible for the national and county roads, while the local roads are the responsibility of the municipalities. To better the conditions for cycling in cities and towns it is therefore crucial for the NPRA to cooperate with actors on the municipal level.

The NPRA has got a new field of responsibility and a new role which the organization is now in the middle of developing, but not yet fills completely. It takes time to institutionalize a new field and create a different view on cycling's role in the mobility system. Planning for cycling does not earn the same respect as planning for car traffic, but is in many ways more difficult. The last few years more people have been hired to work with cycling, both when it comes to planning of infrastructure and on a policy level, for example each of NPRA's five regional offices has now got a bicycle coordinator and there are cycling contacts in each of the 30 road districts. But the NPRA still front an important challenge when it comes to increasing the competence and knowledge about cycling in its organization.

[6] The Directorate of public roads is responsible for ensuring that the Norwegian Public Roads administration (NPRA) manages its resources and reaches the objectives set by the Norwegian Parliament (Stortinget) and the Government.

2.4 The cycling policy on local level in Oslo

Sustainable mobility and cycling policy in Oslo

Cities are very important factors when it comes to developing a sustainable world society, something emphasized by the urban ecologist Herbert Girardet in the following statement: "The cities of the 21st Century are where human destiny will be played out, and where the future of the biosphere will be determined. There will be no sustainable world without sustainable cities" (Girardet, 1999, p. 9). Working for a sustainable city is in many ways a local responsibility. Agenda 21, the Rio declaration on environment and development emphasized the importance of involving the local population in the work for a sustainable society. This is something the city of Oslo has taken into consideration with the formulation of a local agenda 21[7] (find out if cycling is part of this work – if not criticize it further down.). The goal is that Oslo shall become one of the world's most environmentally friendly and sustainable capital cities. To lead the way the following vision has been adopted:

> "Oslo shall be a capital city in sustainable development, characterised by economic, social and cultural growth according to nature's ability to sustain that growth ecologically. We shall pass on the city to the next generation in a better environmental condition than we ourselves inherited it."
>
> - The City of Oslo's vision[8]

The vision is challenging, but not unrealistic; Oslo has a well developed public transport system and little industry, it is beautifully located by the Oslo fjord with great areas of forests in the immediate proximity. There are many obstacles as well, however, one being the amount of traffic. Although the rush-hour traffic in and out from Oslo is not as bad as in most other large European cities, it is getting worse. Oslo's population is growing and the economy is good which points to there being more car traffic. This year 9300 more cars have passed the

[7] Local agenda 21 originated at the Rio summit in 1992 and is a framework for implementing sustainable development on the local level. 267 Norwegian municipalities had endorsed the Fredrikstad declaration in 2002, a step towards playing an active part in local agenda 21.
[8] See webpage: http://www.byradsavdeling-for-miljo-og-samferdsel.oslo.kommune.no/miljo/english/

toll ring in August than at the same time last year. At the same time, the capacity of the public transport is strained at peak hours. AS Oslo sporveger, the company responsible for Oslo's public transport system has experienced a 7 % growth in passenger traffic this year (Halvorsen & Olsen). This growing pressure on the traffic system will probably put the mobility issue higher on the agenda.

For a city to be sustainable the urban communication system has to benefit sustainable development. Our dependence on mobility or our transport patterns is the single most important factor influencing the global environment negatively. This is also the case in Oslo where car traffic is the city's main source of pollution. The National transport plan asserts that reducing car traffic is, in large, up to local initiative, "a policy where local authorities to a larger extent make use of their means to reduce the need of cars, will stimulate the choice for other modes of transport than automobiles, including bicycles" (NTP 2006-2015).

The role of the bicycle in developed countries should not be overlooked wrote Hugh McClintock in 1992; "In recent years a growing awareness of the benefits of the bicycle in terms of cheapness, health, the environment, and convenience in busy urban conditions has resulted in a major revival of bicycle usage" (1992, p.3). Well, a major revival might be a bit of an exaggeration, at least when it comes to Norway; fewer people cycle today than in 1992. Nevertheless, along with the increased focus on cycling in general, the awareness of cycling's benefits has grown in Oslo as well; in fact Oslo started the work to improve the conditions for cycling earlier than most other cities. Still, the new wider appreciation of the importance of cycling at national level has added new emphasis to the value of facilitating cycling in cities and this increased national commitment has definitely helped boost the attention given to cycling in the city of Oslo.

The main bicycle path network and cycling strategy

What has had the most influence on the bicycle's role in Oslo is probably the adoption of a plan for a main bicycle path network. It was made by NPRA-Oslo, the city's agency for road and transport and the city's agency for planning and building services, and adopted by the city council in September 1999. It is therefore a shared plan which, in addition to it having been adopted politically, gives it legitimacy. It means that the local politicians support the idea that Oslo is going to have a main bicycle path network of 180km and that there are different bodies of government following it up. The responsibility is divided between NPRA- eastern Region and the City of Oslo, the municipal part covering about 70 km. The bicycle network is being established primarily for the use of bicycles as a means of transport and the routes are to cover the most important roads in and out from the centre of the city, as well as important connection routes crossing it. The plan is an important steering document for the cycling policy in Oslo and forms the basis of everything that is being planned.

In 2006 the City council also adopted a cycling strategy. The strategy was requested by the politicians in the municipality and then prepared by the agency for road and traffic. It follows the national cycling strategy in that it proposes the same main and preliminary goals. It also formulates a vision for the city's prospective work to promote the bicycle as a means of transport: "Oslo is in 2015 Norway's national bicycle city, where the bicycle is being experienced as an attractive, safe and effective mode of transport" (Sykkelstrategi for Oslo, p. 5). The aim is that bicycle traffic in Oslo is to comprise 12% of all travel by 2015. The strategy takes the plan for the main bicycle path network into consideration and says that it is to be constructed, but it also takes a more secondary network of bicycle paths and tour paths into account. A series of strategies were adopted which describe how the goals can best be

achieved and where the agency for road and transport should concentrate their work, among these are the following:

- The main bicycle path network is to be completed by 2009
- Safe bicycle paths between east and west through the centre
- Elucidate spots, crossings and distances hazardous to traffic.
- Better information and signs for cyclists
- More parking for bicycles at central places
- 30 km/h in the centre to be pursued
- Increase the operation and maintenance of bicycle infrastructure
- Arrange for cycling against one-way traffic
- Elucidate right of way for cyclists in relation to cars
- Continuation of the city-bike arrangement
- Compensation for using bicycle in the service of the municipality

Attention is first and foremost given to the construction of bicycle infrastructure and the improvement of the physical facilities. But some strategies are also proposed that can help increase the amount of cycling by other measures, like giving compensation for using bicycle for work in the municipality and continued support for the city-bike[9]. In 2002 the speed limit in the centre of Oslo was lowered to 30 km/h. Because of narrow streets, dense traffic and routes for public transport they find it hard to construct continuous bicycle lanes here and therefore the fundamental principle in the centre is to mix bicycle traffic with other traffic. To allow this the speed limit is reduced, but as the speed is still higher in many places the strategy points out that this might demand solutions like separate bicycle lanes or constructing speed bumps.

[9] The city-bike arrangement is a cooperation between the city of Oslo and ClearChannel Adshel. They provide bicycles cheap and easily available to the public.

By looking at the different policy documents and plans concerning cycling in Oslo, one might get the impression that the city is doing really well and is far ahead when it comes to implementing its policy to increase cycling. Although Oslo has got further than many other cities, most people would agree that the circumstances are far from satisfactory. The city has had cycling on its agenda since the end of the 90s but the construction of new infrastructure has kept being postponed and delayed and further increase of motorized traffic has lead to more congestion and probably worse conditions for cyclists in many places.

The original plan was that the main bicycle path network was to be completed in 2008, then 2009, but now 2015 is mentioned as a more probable date. The main reason is that planning in a dense city structure is very difficult. It is hard to get room for something new when the streets are already contested. User conflicts and the clash of economical interests when it comes to the use of urban streets make every meter hard to agree upon. Of course constructing new infrastructure is expensive as well, but in Oslo it seems like the main solution is not more money but rather strengthening the planning. The approval of plans and force behind their implementation is what is missing. This is very much a political question; I was given a concrete example of a planned bicycle route that was never proposed because the planners already anticipated that it would not get accepted by the politicians. They are not willing to remove parking spaces, especially in residential areas because they fear the political consequences, although these might be short term. To a certain extent one can say that the slow progress is about politics not money. Therefore, stronger prioritizing politically will be crucial for development to move in the right direction.

2.5 Collaboration between the different political levels

The different levels of government have to work together if they are to reach the goal of a 50 % increase in bicycle use. The city of Oslo holds a local perspective with specific and practical solutions to the approach of the problem, the national level on the other hand has an important role in providing the right framework for the local solutions to succeed both in Oslo and the rest of the country.

Governments act on a local, regional and national level. Questions concerning cycling are mainly treated by national and local authorities. Across these political levels there is interaction which mainly happens between two different groups of actors; between politicians and between the people in the administrative organizations.

The national government and the city of Oslo have more or less equal goals for their cycling policy. There is an equal understanding of the problem at hand and the comprehension of the best way to solve it is also pronounced similarly. In practice, it is always easier to create goals than it is to achieve them however, and when policies fail the response is often to blame other actors which share the responsibility on a different political level. Therefore, clear areas of responsibility are crucial and a collective united political priority would be good in order to achieve the goals of better transportation for all users.

The situation is different at the administrative level. Here employees work together and collaborate within the given framework. As the NPRA has local districts, cooperating with the respective political administrations at local level comes easy. In Oslo, people working with cycling in the agency for road and transport cooperate with the Oslo district of NPRA, as in the case of the plan for the main bicycle path network.

Generally politicians are positive to cycling, but when it comes to changes at ground level affecting parking spaces etc. it is hard to get the plans through. Because there is no overall opinion that cycling should precede other interests in more cases, the articulated positive argumentation at top level does not affect the political decisions at ground level. This shows that it is difficult to make new policy to benefit cycling in a car-centred society. Stating goals and making plans are often easier than taking action.

2.6. Creating passages a political question

Travelling is about getting from one point to another, but it is also about the travel itself; the way the travel is performed or the way it happens also having value and definitely having an impact on our choice of travel mode. Using a bicycle as a means of transport is also about getting from A to B, but maybe even more about the travel itself more so than travelling in a car or with a train for example. On a bicycle you are in a way closer to your surroundings something which can be both positive and negative.

Peters describes passages as both planned and contingent orders. When it comes to cycling in Oslo and most other Norwegian cities the contingency plays a bigger role than when travelling by most other modes. In fact, the passages are often not planned at all, the cyclist do not have a given space for him/her in the city traffic, something which both the cultural and infrastructural surroundings bear witness to. In one way one could say that the planned part of cyclist's passages have big flaws, something which makes the experience of cycling very individual. Sometimes badly planned passages for cyclists are actually making the route even more dangerous. A lot depends on the exchange possessed by each cyclist. But even a very experienced cyclist will run across flaws in the passage, flaws that cannot be repaired in real

time and which might lead to an accident. There are many factors that sum up the construction of a passage; there are rules, infrastructure, cycling culture and the surrounding environment. In Norway, the passages are both too narrow and too wide. Narrow in the sense that the surrounding environment and conditions for cycling is poor and wide in the sense that cyclist can choose to ride where and how he/she likes within this given environment; on the sidewalk or in the roadway and by only partly following the traffic rules. This wideness might be negative for the cyclist however because it feed the negative culture and lowers the acceptance and approval of other traffic participants. This is an important factor to alter in order to improve the environment surrounding cyclists.

Cyclists need to be given a clear role in traffic. The problem is that because the cyclists are not sure about or feel uncomfortable in their role in traffic, the other traffic participants do not know how to act in relation to them either. To create a clear role is a job for the politicians. Such a clear role might also change attitudes towards cyclists in traffic.

2.7 Conclusion

Historically, the attention given to cycling's role in traffic and the bicycle as a mode of transport is rather small in Norway. But today, the task of improving the conditions for cycling is given increased attention and approached on both local and state level. Strategies to make cycling safer and increase the modal share of cycling have been adopted by the national government as well as in Oslo. The main solution that is promoted in order to reach these goals is to construct better infrastructure for cyclists.

But as there are such a wide set of factors influencing condtions for cycling, the problem must be attacked with the use of different measures. Cycling should aslo be viewed in relation to

urban mobility problems and the question of sustainability. Although environmental issues are mentioned in the strategy, there is not all that much focus on this in comparison to the health issue. A combined effort between the different levels of government is crucial and most of all, words must be followed up by action. Cycling must to a larger extent precede other interests on ground level in the traffic landscape if anything are to change.

3. A Cyclist's Passage

> "(…) as a cyclist you are forced to become an outlaw. You are forced to live on the outside of society and on the edge of the established traffic system which is more and more about motorized traffic, even for healthy people. The cyclists are suppressed, we are a silent minority, our hunting-grounds become increasingly worse and we are forced into patterns that are not suitable for us, we are not allowed to speak our own language, we are forced under ground. But beware, because the unreasonableness is so obvious, and it must not surprise anyone that anger and aggression pile up in the cyclists and that we some day, when the non-cyclists have become so fat that they hardly manage to waddle themselves in and out of the car, hit back with all means. I am a cyclist"
>
> – From the novel "Doppler" by Erlend Loe[10]

3.1 Introduction

Taking a cyclist's perspective can be pretty challenging, it means no longer taking the normal and habitual viewpoint where the car is the point of departure and the other traffic participants' role is decided based on its position. Since motorized vehicles entered our society they have gradually got so intertwined in our everyday life that no one can really picture a future without them, they have reached a position no one can really challenge. There is a sort of taken-for-granted-ness in the way we view traffic and traffic's character which makes shifting this perspective difficult. This is necessary however, if we are to develop a mobility system with the bicycle as a natural and important component. In this chapter I will look at some of the challenges and problems related to cycling in Norway and more particularly Oslo. To improve the conditions for cycling, issues concerning culture, attitudes and mind-sets are important to take into account as well is trying to look at the traffic system from the cyclists' perspective. In the following I will go through cultural aspects in relation to cycling, cyclists' role in the development of cycling policies and the way the traffic system is experienced by cyclists.

[10] My translation – an English version of this novel does not yet exist.

3.2 Cultural aspects

Attitudes towards cycling

In Norway there has traditionally not been a culture for using a bicycle as a mode of transport. Cycling has been seen as recreational, as a way of working out and as a means for kids to get to school, not as a vehicle of transport and a way to get to work. Between 1992 and 2001 the part of travel undertaken by bicycle decreased by 3 % and it is estimated that 60 % of all travel between 1 and 3 km are done by car (Nasjonal sykkelstrategi, 2003). The car is most people's first choice.

Attitudes towards cycling are important to consider when the task at hand is increasing bicycle usage. Recognizing benefits and barriers for cycling raised by the population can help steer measures to improve cyclists' conditions in the right direction. In a survey done by the Institute of Transport Economics in 1997, people in Oslo with a real choice between driving a car, walking or using a bicycle were interviewed about their attitudes towards the different modes of transport. The most important reason for cycling to work was to get exercise; other reasons mentioned were that it was easy, environmental friendly, the fresh air and that it was cheap (Stangeby, 1997, p. 26).

There are both real and perceived barriers to bicycle use. Following a study by the EU research project WALCYNG, car drivers without much experience in cycling and cyclists who practice cycling regularly raise different barriers as the most important. Car drivers point out: the problem of transporting heavy things, dependence on weather, cycling being dangerous, incomplete cycle network and badly signed bicycle routes. Cyclists also mention the incomplete bicycle network, but the other obstacles they point out are the high speeds of cars, lack of secure parking and car noise and fumes (Hydén et al, 1998; ECMT, 2004).

Barriers to using green modes of transport such as bicycles are often reasons for driving a car. The respondents in the survey conducted in Oslo were asked for the most important reasons for driving a car to work. They were; car takes less time, taking other passengers, private errands or shopping within the day and the need for a car at work. These answers supplement the previous mentioned barriers to cycling by car drivers, but it is interesting to see that they differ; bad weather and the problem of carrying heavy things are not really considered as important reasons for using the car (Stangeby, 1997, p. 40).

Tolley points out that the obstacles to increasing cycling are some functions of the environment in which they take place and lists the principal obstacles discussed by Shayler et al. (1993): accidents, safety and perceived danger, gradients and effort, weather, city size and social status. Although these deterrents might be significant, he emphasizes that the potential for increasing the levels of cycling is great (Tolley, 1997, pp. 5-10). That is also the case in Norway. The institute of transport economics has estimated the potential for increased bicycle traffic in Norwegian cities and towns of more than 5000 inhabitants to be at least 50% (Lodden, 2002). Most trips in urban areas are very short; in Norway almost half of all trips are shorter than 5 km. That is a manageable distance to cover with a bicycle for most people and most people own or have the possibility to use a bicycle (81% of the population between 13 and 74) in Norway. Releasing this potential depends to a large extent on changing attitudes; people need to understand that cycling is a possible alternative to the car.

Who is the cyclist?

The cyclist, who is that? What is a cyclist like? These questions have as many answers as there are people with bicycles; cyclists are no more of a homogeneous group than car drivers. But, it gets a bit more unambiguous when looking at *urban* cyclists, at least in most Norwegian cities of a certain size. To make use of your bicycle in Oslo, for example, you

better possess characteristics such as courage, motivation, humility, inventiveness and a fair portion of stubbornness.

One approach to categorizing cyclists is to separate between the sport cyclists and the everyday utilitarian cyclists. The sociologist Christin Berg alternatively distinguishes between three groups in her study of cyclists in Oslo and Stavanger. Because she finds it difficult forming clear typologies, she creates three groups of dimensions which the cyclists are placed in relation to. She does this by looking at their demeanour in traffic, their style and their attitudes towards and reasons for cycling. The "sport cyclists" symbolise exercise or sporting as a reason to cycle, they have a sporty style and their way of cycling is skilful and self-assured. The "bicycle enthusiasts" express some form of idealism in relation to cycling, they talk about why one should cycle, use the bicycle a lot and for different purposes and their way of cycling is skilful, safe and with signs of regularity. The "pragmatic cyclists" have a laid back relation to cycling. If it is convenient and useful to cycle then the bicycle is being used, the barrier to use another means of transport is low. The clothes they use depend on the purpose of the trip and not the act of cycling and the way they cycle is pragmatic, but not necessarily skilful. Berg points out that it is fruitful to group the cyclists the way she does to be able to understand who it is that cycle, why they cycle and under what circumstances different types of cyclists use their bicycle (Berg, 1996).

Policy makers' current focus is given to the transport cyclist, which is a person who uses the bicycle as a means of transport. Still, it is important to recognize that different types of cyclists fall under this category. With a wider approach we could also add for example kids and elderly people to Bergs groups. The fact that cyclists behave and act differently in traffic is important to take into consideration when planning for cyclists.

A malignant culture?

Attitudes towards bicycle use or cyclists among car drivers are an important part of a bicycle culture. These cultures can vary between cities and even within a city (håndbok 233, 2002, p.11) and the relation between different traffic participants can sometimes be problematic; something which especially counts for car drivers and cyclists. The following statements come from a discussion on the internet about cyclists and their right to use the road when there is a bicycle path nearby. The discussion has clearly engaged a lot of people as there have been more than 300 inputs in less than three months. Obviously discussions like these are not representative, but they can serve as an example of attitudes found among some traffic participants and help illustrate the importance of a benevolent and considerate traffic culture.

Cyclists' have a right to use the main road although there is a bicycle path in close proximity; nevertheless, many car drivers find this irritating:

- "…sometimes I feel like stopping the car, asking them to get off the road and onto the bicycle path where they belong. Wonder if I should start driving on the bicycle path instead, if they can cycle on the road, then I can drive on the bicycle path".
- "Aaah, it is so annoying. What I do is that I drive really close to them, at least when I see there's a bicycle path next by"

(diskusjon.no)

The irritation is also directed at cyclists not following the traffic rules and constantly switching roles, choosing the one that best gets them through traffic:

- "Fair enough that they count as drivers and cycle on the road also when there is a bicycle path, but what annoys me the most is that as soon as it suits them they chose to be "pedestrians" and don't care about duties to give way, traffic lights and signposts!"

- "I must honestly admit that when cyclists do not comply with the rules I don't feel obliged to comply to my part as a car driver either"

(diskusjon.no)

Cycling is by many not thought of as a serious alternative to the car. Although political attention is now being given to the bicycle as a means of transport, its image as a toy or a leisure item is probably still quite common (Tolley, 1997, p.18). The following statement represents such a view:

- "When there is a bicycle path right next to the road, then one should really use it and not annoy the hell out of car drivers who might be stressed and in a hurry".

(diskusjon.no)

These are all rather harsh attitudes towards cyclists who occupy road space and delay or hinder the "important" traffic. However, following the discussion it becomes clear that most have a certain type of cyclist in mind when complaining about their behaviour. Namely, the sport cyclists or the cyclists in "condom suits" as several of the debaters prefer calling them.

- "I hate cyclists who occupy the road with their condom suits and their carbon bicycles. Roads should be for cars only, cyclists can use the pavement"

(diskusjon.no)

Berg points out that these cyclists have a self-assured and skilful way of cycling, but some of the interviewees she places in this group also act irresponsibly in traffic; cycling fast, reckless and at times even dangerously. Often it is this type of cyclist that stands out and demands attention, which might lead to a narrow definition of and opinion about cyclists. So the cyclists themselves can also be part of the problem. Some cyclists do not oblige to any rules and do not act with consideration for other traffic participants and even if they are few, this can ruin cyclists' reputation or help create a malignant traffic culture. Some cyclists might

also take on a role as a victim. If never feeling prioritized or considered in the traffic system cyclists probably do not foster a good relationship with other traffic participants.

- "I quite simply get furious at fat car drivers who don't do anything apart from contributing to making the city air unbearable when I cycle to work. They show no respect, honk and pass dangerously, they shouldn't have been given a drivers' license. Fools…"

(diskusjon.no)

These attitudes are rooted in a missing environment for cycling and cyclists' lack of a separate role in traffic. In the Norwegian handbook for bicycle infrastructure the following is written: "It is not easy to be a cyclist in Norwegian cities. In many places little is done to facilitate for this group in traffic and cyclists often feel unwanted both in the main roadway and on the pavement. In addition, the common usage of off-road bicycles in the city traffic makes it possible to shift arena almost independent of the barriers in the way. This can be part of the reason that some cyclists have developed a 'do whatever one likes culture'" (håndbok 233, 2002, p. 12). To create an understanding and considerate traffic culture the conditions for cyclists must be improved. When this is done cyclists will also develop a more logical and safe behaviour in traffic.

From the 1970s the focus has been on building "foot and bicycle paths" mostly in connection to schools and in areas where children move. The law from 1978 which stated that cyclists could ride on footpaths together with pedestrians was named "devastating" for the cyclists by one of my interviewees[11]. At that time the law was seen as a good way to create better safety for cyclists in an environment with increasing traffic, but at the same time this led to

[11] Interview with Anders Dalen, NPRA, Directorate of Roads.

neglecting cyclists' special needs. In countries like Denmark and the Netherlands the car drivers, the walkers and the cyclists have been treated as three separate groups with different rights and duties. In Norway this law lead to a practice where cyclists were put in the same group as pedestrians although they did not get the same rights.

3.3 The Norwegian National Cycling Association

Cyclists' ability to influence policy makers in questions concerning cycling can be very important as they possess experience and information that policy makers often do not. The operations of Cycling clubs and organizations have basically two different aspects: sporting and political. The balance of emphasis depends on their origins and their members (Forester, 1994, p. 154). The Norwegian cycling federation is an organization primarily for the sport aspects of cycling, but the Norwegian national cycling association (hereby referred to as NCA) has more of a political role and has been important in the development of cycling policies.

The NCA was founded in 1947 with an aim to "encourage increased understanding for and increased safety and enjoyment by using a bicycle for work, leisure and sport". Some of the subject matters the organization especially wanted and still wants to work for are improved traffic culture and safer traffic, construction of bicycle paths and better parking conditions for bicycles (Vi syklister, 1947, p. 4).

Cyclists are not a homogenous and unambiguous group of people talking with an unequivocal voice. Although many are annoyed with cycling's poor conditions, the frustration is not necessarily shown collectively. The exception is the NCA which deserves credit for the work they have done politically to get cycling higher on the political agenda. They did a lot to get

the cycling strategy as part of the National Transport Plan (NTP) for example; their lobbyism influenced Stortinget to ask the government to include such a strategy. The organization's role as a watchdog is very important to keep up the pressure for the implementation of cycling policies.

3.4 Cyclists' role in the construction of passages

Exchange at one's disposal

In the first chapter I pointed out that a cyclist has to act in accordance with sudden hindrances and difficult situations that can arise at any time. If a cyclist suddenly finds a car parked in the cycle lane further on, the choice of action might be to turn left into the main road and join the motorized traffic until the car is passed. But if the traffic is heavy some might also choose to stop and maybe even dismount the bicycle to get onto the pavement. The choice of action depends on various factors including the cyclist's knowledge, skills and experience as well as the surrounding environment. Such qualities are what Peters names exchange and are very important as a cyclist riding in the centre of Oslo will inevitably meet challenges on the way. There will be infrastructure and rules that are hard to interpret, there will be other traffic participants with unexpected behaviour and often the cyclist will find no space for him/herself in the traffic at all. In order to cycle to school or to the train station the cyclist has to create a passage for him/herself in real time – a way through the city. The next section will show how exchange is both embedded in the cyclist's opportunity to act in the situation and distributed in advance in the form of the design of infrastructure. In relation to the latter, the section below will also serve as an introduction to the next chapter concerning the design of infrastructure.

Cycling in Oslo

A good way to take a cyclist's perspective in the mobility system is to be a cyclist; therefore I will take you through various parts of Oslo by bicycle. By doing that I want to demonstrate how cyclists constantly confront disruptions on their way and how exchange is crucial in repairing them. I cycle along a route that follows the main bicycle path network as well as streets that are outside the network. The trip was made at one of the busiest times of the day when people, including cyclists, are on their way home from work. Overall it was not that long, but demonstrates a variation of arrangements which I have divided into the four sections below.

Section 1: Contested bicycle paths at Grünerløkka

Starting off at the eastern side of central Oslo I follow a connection route down through busy Grünerløkka. It is early afternoon and this area is bustling with pedestrians, trams, cars and bicycles. The trip starts below Birkelunden in Thorvald Meyers gate[12] and continues down through Markveien. The arrangements in this part are characterized by a two way bicycle path positioned between the roadway and quite a narrow sidewalk on the left hand side. In Thorvald Meyers gate the motor traffic as well as a tramline moves in two directions. There are a lot of restaurants and cafés in the area which also have outdoor serving on the narrow sidewalk, so people do not have much space to move around this Friday afternoon. This is the main problem when riding a bicycle here; pedestrians constantly have to step out onto the bicycle path to continue their passage. In addition the bicycle path is not as wide as intended most of the way because this area between the sidewalk and the roadway is shared with parked cars. These cars are often left way into the area originally planned for cyclists to be at a safe distance from the tram on the other side. In Markveien the situation is a bit better, the

[12] The words gate/gata and vei(en) in Norwegian means street in English

roadway is only open to one-way traffic, there are no trams and the bicycle path is separated from parked cars with curb stones, but pedestrians are walking or suddenly stepping into the bicycle path here too.

As I have explained earlier exchange is partly distributed in advance. In Markveien and Thorvald Meyers gate, cyclists are given the opportunity to travel outside the tram's passage, which increases the feeling of safety and they are given the opportunity in to cycle in the opposite direction of the one-way traffic. But the traffic landscape is by no means constructed in such a way that cyclists can travel easily. Cars occupy most of the space while pedestrians and cyclists share the leftovers.

But exchange is also the insight and skills possessed by the cyclist and possibilities to act in accordance to and deviate from rules and acknowledged behaviour. Cycling in this area means your passage is constantly interrupted, mostly by other traffic participants but also because the infrastructure is disconnected. In Thorvald Meyers gate for example the bicycle path suddenly stops at a junction and does not continue on the other side. I repeatedly had to stop, slow down and take detours and I also had to dismount my bicycle a few times. All this demands a lot from a cyclist. When I get to Markveien I follow the bicycle path a little further, but then decide to continue in the roadway as I am heading in the same direction as the one-way traffic. I have the opportunity to deviate from the passage planned for cyclists and suddenly I can increase my speed and relax a bit more, and in no time I am at the end of the street. Nevertheless there is sort of a "social law" saying that you are not to cycle in the roadway when there is infrastructure for cyclists next to it, so a feeling of being in the wrong place is present.

So, although the arrangements here attempt to improve cyclists' passages it only makes a small difference. It is almost impossible to cycle here with any speed at all and it is necessary to keep an eye one everyone in close proximity. The design of the city landscape does not stand in relation to the utilization of this area as green modes (especially pedestrians) far outweigh the amount of cars, but are left with little space.

Section 2: Confusing infrastructure in Torggata.

At the bottom of Markveien, I cross the Anker Bridge and carry on in Torggata, which is part of the main bicycle path network. Initially, there is a bicycle path on both sides of the road but after crossing Hausmannsgate, it turns into a narrower and busier street with a narrow bicycle lane on the right hand side partly separated from the roadway with small blocks or bars, parked cars on the other, one-way traffic in the middle going in the opposite direction and small sidewalks on both sides.

The notion that something is not how it should be emerges when I am half way between the Anker Bridge and the junction in Hausmannsgate. I am in the cycle lane on the right hand side and as I move towards the junction the traffic lights have just turned green and cars and bicycles are coming towards me in the opposite direction. Suddenly, three cyclists are heading in my direction in the cycle lane on the wrong side of the road and I have to slow down and let them pass while I wonder why they are not using the cycle lane on the other side. On the other side of the junction the explanation for this unconventional behaviour appears in the form of the arrangements made for cyclists here. The cycle lane here is only on the right hand side, but still the majority[13] of the cyclists coming in the opposite direction use it. This is

[13] While I am in this area about ¾ choose to use the cycle lane in the wrong direction instead of cycling in the road way with the one-way traffic.

probably the reason why they continue on the wrong side of the road after having passed the junction even though now there is a cycle lane on both sides.

The single bicycle lane is marked with arrows showing the direction but it seems that many people do not know, do not care or do not see any other possibilities. I decide to ask some of the people what their reason was for cycling in the wrong direction. The first girl's response was, "Because the pavement on the other side is too narrow and full of pedestrians." I then asked her; but what about the roadway? Her reply then was, "Well, it doesn't feel safe enough, I fear the cars more than the cyclists coming in the opposite direction and I have the opportunity to move over to the sidewalk if necessary". A man's response was, "I haven't really thought about it, I just cycle. But I guess it is less safe cycling in the roadway and I don't want to be in the way of the cars". Others also said that they simply did not know that it was wrong.

The problem here is complicated, first of all the correct use of the infrastructure is probably not obvious to cyclists, but at the same time many also lack knowledge and are not accustomed to this sort of infrastructure. With a mixture of poor facilities and nonconformist conduct the result is that cyclists enter the junction in a highly unconventional way which represents a danger to themselves as well as others. If I had met the three cyclists in the middle of the junction the situation would have been even worse than meeting them in the bicycle lane. Meeting them in the bicycle lane is risky enough though, especially after the junction where it is very narrow and closed in between stones. In addition, there are others who also represent a risk here; two cars have parked temporarily in the bicycle lane half way down the street causing cyclists to swerve onto the sidewalk or into the roadway when

passing. The traffic landscape in Torggata is full of flaws which the cyclists try to repair as best they can, with mixed results.

Section 3: No facilities in Grensen

I continue into the inner centre of the city, where the first part is the end of Torggata which is a pedestrian street and the second part is the street Grensen which is developed for two-way traffic including trams and pedestrians, but not cycling. In the pedestrian street I continue cycling although I find it a bit irrational. Nevertheless, the rules say that I can and in a way I feel more welcome here than I often do in the roadway. At the end of Torggata my plan is to turn right into Grensen, but now I get to a city landscape where the opportunity to continue cycling drastically diminishes. To continue cycling here means either joining the pedestrians in the sidewalk or the cars and the tramline in the roadway. Equipped with an off road bicycle I take the chance and jump into the roadway with the knowledge that I might suddenly have to get out of the way if a tram advances. In the end it does not take long before I find my way onto the pavement. Looking around I do not see any other cyclists in the roadway, but a few are cycling slowly or wheeling bicycles on the sidewalk.

The inner centre of Oslo is not a good place to use a bicycle. There is no planned passage for cyclists here and the area is contested; therefore it is problematic moving in or through this part of the city on a bicycle. This is where most public transport connects and where many cultural and social events take place, but cyclists are to a large degree excluded. Little exchange is available to the cyclist in this part of the city and as a result a passage is hard to construct.

Section 4: Wide streets and cycle lanes in Akersgata and Ullevålsveien

Right after switching to the pavement in Grensen I turn right into Akersgata and continue up Ullevålsveien. In these streets I meet a totally different situation; the street is wide and gives a spacious feeling and for the first time the cycle lanes constructed on each side provide sufficient space. At last I can cycle without focusing most of my attention on deciding where and how. There are some problems here as well though. In the roundabouts I share the space with motorized traffic and some car drivers seem like they do not expect me there giving way right at the last moment. Furthermore, how to turn left in a junction is not clear as the cycle lane stops right in front of it. This design might lead to problematic behaviour, especially if the car to the left of the cyclist is going straight ahead.

3.5 Conclusion

Cycling in Oslo demands a certain amount of exchange at one's disposal. As the infrastructure is not fully developed and other traffic participants often act unpredictably the cyclist must constantly repair their passage in the moment of travelling. In Oslo and Norway this is probably the case much more often than in a Dutch city for example. Cyclists lack both rights and duties and they do not have their own identity as a group. This means that other road users are not sure about how to behave or act in accordance with them, and the cyclists themselves often do not know how to behave in traffic either.

The focus is currently put on building infrastructure and improving the facilities for cyclists, but road users often do not know how to use or handle the new infrastructure. In addition, attitudes and cultural aspects have impact on the conditions for cycling. These factors are also important if the goal is to get more people to start cycling. It is necessary to change attitudes towards cyclists and cycling and more focus should be put on teaching cyclists how to cycle

in traffic. Moreover, people must learn to acknowledge cyclists as valid members of the traffic system.

4. Designing Cycle-friendly Infrastructure

4.1 Introduction

Having gone through the political as well as the users perspective on cycling's conditions, what about the design of infrastructure? Viewing the problem of how to increase cycling in relation to infrastructure is at the centre of the political and public discussion. Yet, it is to a large extent limited to the conclusion that more should be invested in infrastructure. In what way this infrastructure should be constructed and what the implications of the different solutions are, do not receive enough attention.

But, there has been a development in the way and to what extent bicycle infrastructure has been constructed. A few years ago there was hardly any infrastructure at all for cyclists, but gradually the attention given to this group has increased. First foot and bicycle paths were constructed to increase the safety of pedestrians and cyclists along the highways and more recently there has been a shift towards viewing cyclists as a separate group with special needs and a larger variety of solutions are being used.

However, this development started late and with a full infrastructure for motorized vehicles already in place. This means that the new adjustments for bicycles happen in relation to, and often subordinated to the traffic system already in place.

4.2 Design solutions

The speed of the different traffic modes is dependent on the design of the infrastructure where they travel, thus speed is the outcome of the ability to create fast passages (Peters, 2006, p.

136). In a traffic system the passages of different traffic modes cross each other, this is especially so in a city where cars, pedestrians, public transport and bicycles are in constant interaction. It is when these traffic participants cross each others paths that problems possibly arise and where designers work for solutions to smooth this interaction. Design of these interchanges can according to Peters "be achieved through the use of different design styles, in which politics play as important a role as roads, intersections and traffic signals" (p. 129).

In a traffic system there are two central aspects influencing the interaction of the different traffic participants; "the design of the traffic landscape and the application of traffic rules instructing road users how to proceed through a traffic landscape" (p. 131). Peters describe ideal types, of both infrastructure and traffic rules, which can be found at each end of a continuum of solutions.

When it comes to designing the traffic landscape he distinguishes between modern and organic design styles. A modern style is characterized by the separation of different road users. By providing different space for different modes of traffic, the intersections of different speeds are prevented and the different modes kept apart. A clear example is the divided highway and it is also shown in the construction of foot and bicycle paths in Norway. The organic design style on the other hand aims to integrate traffic participants. Here the design seeks to minimize the difference in speed so that traffic participants can meet on equal grounds. In practice this means that slow road users must be taken as a starting point and faster traffic participants adapt to their velocity. This design takes self-organization as a principle when road users meet, road users' choice of action emerge as a matter of course. Peters describes an intersection with the form as an empty square, where "a car driver becomes puzzled, slows down and tries to establish eye contact with other road users" (p.

133). Other examples of organic design solutions are also present in the Norwegian traffic landscape; strict speed limits in residential areas, speed bumps and roundabouts are examples. Oslo has set the speed limit to 30 km/h in the inner centre of the city, however, for this to work as a measure it is crucial that the limit is recognized.

The two ideal types of styles for regulating action in traffic is named by Peters as regulative and deliberative. The regulative style takes clear rules and guidelines as necessary to guide traffic, the rules are the same everywhere and legally binding. The success of this style is dependent on "education, the internalization of rules and the ability to sanction offenders" (p. 134). In the deliberative style traffic rules play a different role, here traffic participants must deliberate on how to act in a situation as it emerges. Peters uses the example of a four-way stop where drivers are obliged to make a complete stop before they decide who has the right of way. By equalizing speed among meeting traffic participants their communication can be "power-free". So, the problem of integrating different speeds into the same space is solved differently, in the first example by an a priori distribution of rights and duties in traffic, in the second by equalizing differences in speed. In practice, the design of infrastructure and the application of traffic rules can not be separated off course. When planning passages for cyclists and other road users these two aspects must be viewed together.

4.3 Accidents and risk in relation to cycling

Making cycling safer is at the centre of Norwegian cycling policy. Reducing the risk of accidents is viewed with the uttermost importance for increased bicycle usage. The national cycling strategy is based on the Vision Zero for traffic safety which is a vision of no fatalities or permanent injuries in road traffic, it places further emphasis on the importance of constructing separate bicycle paths and bicycle lanes to increase the safety of cyclists

(Nasjonal sykkelstrategi, 2003, p. 26-27). In fact most cycling policy is based upon the common thought that separate infrastructure for cyclists is the best way to increase their safety, but this view is not shared by everyone.

Different views on the best way to improve conditions for cycling

According to John Forester, an American cycling transportation engineer, there are two views in the field of cycling transportation engineering that compete for acceptance. Forester asserts that the concepts accepted by most governments in both the U.S.A. and in Europe are mere superstition, while the theory that meet the scientific criteria is not accepted and understood by few. The first view or theory says that the roads are too dangerous for cyclists and that it is necessary to construct separate facilities for cyclists to ride safely. Forester names this hypothesis the cyclist-inferiority superstition. The second hypothesis, on the other hand, says that cyclists fare best when they act and are treated as drivers of vehicles. This hypothesis is named the vehicular cycling principle (Forester, 1994, p. 1-4).

Forester supports the second hypothesis and has developed a discipline of cycling transportation engineering where cycling is regarded as a form of vehicular transportation. He argues that riding a bicycle in traffic on normal streets is safer than on restricted bicycle paths and bicycle lanes. He points out that collisions between bicycles and motor vehicles are not the most frequent type of cyclist accident, but more importantly is that within this category, accidents involving turning and crossing is by far the biggest portion. Norwegian statistics show the same thing as I describe in the next section. As cyclists still have to cross other traffic participants' paths, a bicycle path or a bicycle lane can not prevent these accidents from happening. Forester argues that in many cases they even increase the risk of these accidents and emphasizes that the opposite view has such a strong hold on public and governmental opinion because of the common belief that cyclists are inferior to or should act

as inferior to drivers of motorized vehicles. This opinion has a powerful psychological foundation which impels many people to cycle dangerously. Forester advocates the importance of more focus on effective cycling training and points out that if children are being taught how to cycle based on fear instead of safe operation; they will become incapable of driving a bicycle in a safe manner (p.301).

Cycling accidents in Norway

The first fatal accident on a bicycle in Norway happened in Oslo in 1885. It occurred when a drunk man suddenly stepped out in front of a cyclist riding at high speed down a street at Bygdøy (Apenes, 1993, p. 125). Since then many people have been killed or severely hurt riding their bicycle. Cyclists are obviously more vulnerable in case of an accident than drivers of motorized vehicles. They are without the protection of a car body and as the Dutch design manual points out; they are drivers, equilibrists and power-plants all at the same time. This combination of tasks with more or less conflicting features, gives the cyclist a special position in traffic (Ploeger et al., 1993, p. 13).

Cycling is often viewed as a dangerous mode of transport with a lot of attention given to the number of people hurt or killed in cycling accidents. As a minimum this view is unfair and a one sided focus on safety in relation to cycling is also a problem pointed out by several authors (Tolley, 1997; McClintock, 1992; Forester, 2002) as well as in the Norwegian cycling strategy. The positive health effects related to cycling far outweigh the negative aspects connected to accidents. Moreover, distortion of statistics might make cycling look more dangerous than it is. The average total risk is biased against cyclists when comparing motorists and cyclists, as age groups which do not exist among motorists (under the age of eighteen there are no car drivers, but plenty of cyclists) are taken into consideration when calculating risk of accidents. Dutch statistics show that for the 18-50 year age range cycling

has a lower overall accident risk than driving motorized vehicles (Dekoster et al., 1999). Cycling accidents are also underreported, something which especially counts for single accidents where other road users are not involved. A study conducted in 2005 found that only about 13 per cent of injuries treated at hospitals are also found in Police records and thus included in the official accident statistics (Veisten et al., 2005, p. 8). Another aspect is that numbers often are exaggerated; the fact is that most bicycle accidents result in low injury severity, but this is not necessarily apparent in numbers.

So, what is known about bicycle accidents and the risk of cycling in Norway? Not all that much and certainly not enough. Norwegian registers of cycling accidents are not good enough as they lack a significant number of accidents. Although some research has been carried out to map the situation, this knowledge is quite limited and partly outdated (Bjørnskau, 2005, p. 3). There are a couple of newer research studies conducted by the Institute of Transport Economics however. One of them is Bjørnskau's study which researches the characteristics of cycling accidents and injuries and finds that there has been a decline in injured cyclists between 1993 and 2004. The study also finds that 75% of the cycling accidents are single accidents and that young people and men are most exposed. When it comes to collisions most of them involve a car, but as much as 25 % are with another cyclist. The study also shows that collisions involving motor traffic in relation to crossing and turning are by far the most common. This is a conclusion reached by most research, the Norwegian handbook for bicycle infrastructure states that 75 % of police recorded accidents involving cyclists happen in intersections and exit roads, or by crossing a road (håndbok 233, 2002, p. 13). Bjørnskau points out that to reduce the accidents one should work for a more unambiguous and predictable behaviour among cyclists and that this is related to the poor conditions for cycling. The conclusion is that constructing separate bicycle lanes therefore seems to be a sensible

measure because then cyclists will feel they have a legitimate place in traffic (2005, p. 50). Something which is not mentioned is that constructing such bicycle lanes would not help reduce the majority of accidents involving collisions, as they happen when crossing or turning and that research shows that the risk of these sorts of accidents might even increase.

4.4 Designing passages for cyclists, in Norway

The Missing passage

When travelling one makes use of passages that are both planned beforehand and created in real time. The planned part of the cyclist's passage in Norway has been too weak, in a way it has been completely missing. This means that it was mainly left up to the cyclist to construct the passage in the real time of travelling. Apart from constructing foot and bicycle paths little was done concerning cyclists until quite recently. Measures were implemented for the sake of safety, not for improved usability. These measures sought to separate cyclists from motorized traffic and in that sense followed a modern style. The problem was of course that they were not separated from pedestrians.

Historically, more has happened regarding the application of traffic rules in relation to cycling. The implementation of these rules is also characterized by a concern for safety. At first they were applied for the safety of other road users however, at the end of the 18th century cyclists were viewed as intruders and disturbers, scaring horses off the road and putting pedestrians at risk. The first law concerning cycling was adopted in 1892 and obliged cyclists to warn other road users before passing them, as well as to ride slowly and carefully on narrow or steep roads, use a torch when dark and generally show great concern. Furthermore, cycling could be prohibited by local authorities at road sections where they

could be of particular danger (Apenes, 1993; Mellbye, 1995). Later, laws were also implemented concerning equipment on bicycles and proper conduct; in 1946, for example, it became illegal to let go of the handlebars and pedals when cycling (Mellbye, 1995).

The traffic rules from 1957 stated that cycling on footpaths as well as crossing footpaths on a bicycle was forbidden. As I have mentioned earlier this law was changed in 1978. The maximum speed limit was quite low in the first half of the 20th century, but it gradually increased and so did the amount of traffic. With this profound transformation in traffic, the way cyclists were viewed changed; cyclists gradually went from being a danger to being in danger. This change has had a deep impact on cyclists' behaviour in traffic. In a way the traffic rules gradually became more deliberative. This was not necessarily the intention, but as cyclists gradually got more vulnerable in traffic they were given more rights to weigh up for the increased motorized traffic. The deliberate style is present in the sense that cyclists can cycle practically everywhere and choose the role in traffic that best fit them. In reality they are neither wanted on the footpaths or in the roadway.

It is problematic that cyclists in practice partly are on the outside of or have an indistinct role in traffic. Regulative applications of traffic rules will not work properly without including all road users. Comparing Oslo with Copenhagen for example, reveals huge differences in cyclists' conduct, in Copenhagen cyclists have to follow strict rules or else they risk steep fines. At the same time they have got extensive rights and their own role in traffic. In Norway cyclists miss both and consequently their behaviour in traffic is often unpredictable and diverse. A deliberative style in the application of traffic rules only present for cyclists is not to their advantage; instead they should receive their own respected role in traffic.

The design style characterizing the modest construction of cycling infrastructure from the 70s is modern in the sense that it separated pedestrians and cyclists from motorized vehicles. In residential areas organic solutions implemented to decrease speed was also a measure. But the overall picture is that cyclists were pressed out of the roadway and that little was done to accommodate these road users' needs, especially in cities. Therefore, one could say that the planned part of cyclists' passages has been missing.

How are passages planned today?

Today, the recognition of cycling as a positive and healthy mode of transport is much higher. And subsequently more is being done to improve the conditions for cycling. The political focus is on the transport cyclist, meaning that the goal is to accommodate the use of the bicycle for transport.

Segregating or integrating bicycles with motorized vehicles is the principal question when designing infrastructure. Both approaches have advantages and disadvantages. Integration means that no extra space is necessary and "underlines the equality of all road users, as all has the same freedom of movement" (Godefrooij, 1997, p. 231). On the other hand, cyclists might feel less safe especially with heavy and fast traffic. Segregation is wanted because cyclists are believed to be better protected that way, but the flip side of the coin is that the aim might be to improve the flow of motorized traffic and that as most accidents happen when turning or crossing the feeling of safety might be false. One of my interviewees told me about a project in Oslo where the NPRA had constructed a bicycle lane and were then criticized by people in the neighbourhood saying the work was not good enough[14]. They wanted a better separation between the bicycles and the cars. But as the interviewee pointed out, it is the people who want a good solution for cars that say that. When constructing good physical divisions it only

[14] Interview with Anders Dalen, Directorate of Roads.

gets easier for the car driver to drive fast and without problems. It is better that the motorists learn how to consider the cyclists in the urban landscape and that the speed is lowered. It is important to acknowledge that high speed has a cost paid by other participants in the traffic system.

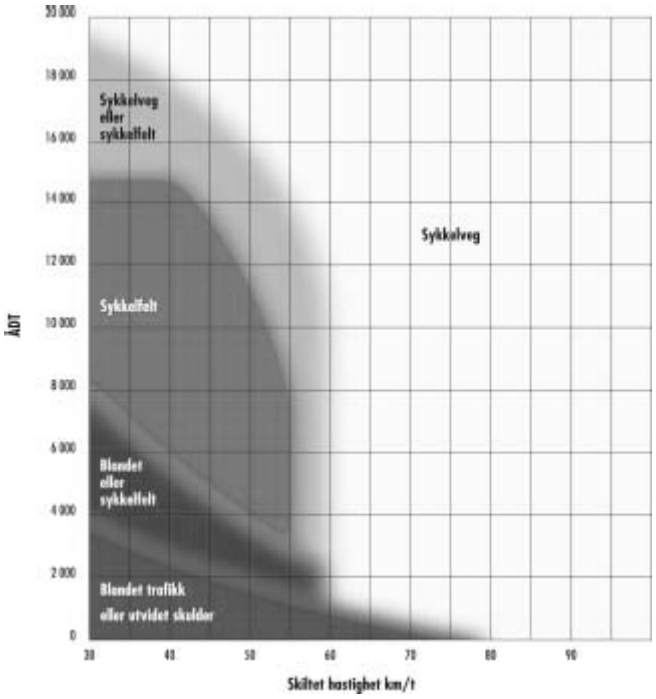
The Norwegian handbook for bicycle infrastructure was published by the Public Roads administration in 2002 and is used as the point of departure for the construction of infrastructure; therefore it is interesting to look at what it recommends in this respect.

The handbook was only completed about ten years after they first started working on it because it was a difficult project and a new field and consequently the focus changed during the period. Groningen in the Netherlands and Münster in Germany were especially used for inspiration as well was the Dutch design manual. The handbook's aim is to advise on what solutions to choose in concrete cases and how to construct them. I will concentrate on the recommendations given in relation to choice of solutions. Five main arrangements for bicycle routes are listed:

1. Mixed with car traffic
2. Bicycle lanes in the roadway
3. Bicycle paths, foot and bicycle paths
4. Cycling in public-transport lane
5. Cycling on road shoulder

The handbook explains that there are two conditions which decide what solutions should be selected for cyclists; first, the type of area, meaning the level of residential density and second, the velocity and amount of car traffic. This means segregation is not prioritized when the speed is low and the amount of segregation recommended depends on the cars' speed and on how many cars there are. As in the Dutch design manual, speed-volume combinations of

motorized traffic are taken as the point of departure when deciding what design solutions to opt for. The below figure is taken from the handbook and is meant as a guide with unclear borders between the different areas (håndbok 233, 2002, p. 28). If the speed is above 60



Figur 4.1 Volume of motorvehicles/24 hours compared with the actual speed of motor traffic

km/h the recommended solution is bicycle paths unless the traffic volume is low, then mixed traffic or an extended shoulder is the best solution. With speeds under 60 km/h the recommended solutions are; mixed traffic or bicycle lanes when the traffic volume is between 4000 and 8000 vehicles per 24 hours, bicycle lanes when the volume is between 8000 and 14500 and bicycle paths or bicycle lanes with volumes above 14500. This is the starting point when designers decide on what to do. As pointed out by one of my interviewees, “We say that to choose from these different solutions has advantages and disadvantages and that depends on the surroundings of course, other traffic, how high the speed is and how great the traffic is,

how many thousand vehicles per 24 hours. We do not want bicycle paths as a solution in the city and we do not want bicycle lanes on big busy roads. So it is a kind of a matrix"[15].

The goals of the Dutch Bicycle Masterplan formulated in 1991 was the same as the goals in the Norwegian cycling strategy; more and safer cycling. In 1998 the Dutch Masterplan was evaluated and they found that the number of fatalities had decreased by 14 per cent, but that despite considerable investment and construction of new cycle-friendly infrastructure, people were not cycling substantially more than before. "Cycling had become safer, but not more attractive to those who travelled by car" (Peters, 2006, p. 148). Peters states that the reason for the partial failure of the Masterplan lies with the design philosophy outlined in the design manual to effect a shift from car to bicycle use. This design philosophy also takes a graph similar to the Norwegian one above, as the point of departure for what design solutions to choose. The problem is that the implicit political character of this graph is not acknowledged. "By taking the speed of motorized vehicles as the point of departure for the design of cycle-friendly infrastructure, they make it impossible to consider the justification of this speed as a political question, and thus a *choice*". (p. 149).

By using the concept of passages it is possible to take an actor's perspective when analysing the conditions and the construction of infrastructure for different traffic participants. The passages of cars, bicycles and pedestrians are part of each other and it is in the crossing of these passages that speed is produced and distributed. Passages have speed as an outcome, but achieving this outcome is dependent on other passages and how these passages are related to each other. In the previous chapter I showed how exchange is both distributed in advance in the design of the traffic landscape and is part of the cyclist's skills and insight. The different

[15] Interview with Hege Gultvedt, NPRA, the district of Oslo

styles used when arranging a traffic landscape distribute exchange differently; therefore traffic designers do not merely choose a certain design style. Their choice also implies that exchange is distributed in a specific way and that a certain speed is given more importance than another. Peters' point is that the making of passages is a political question. "Who decides if and why a certain speed is more important" and "why should a car have to wait for a bicycle or vice versa?" being important examples of such questions (2006, p. 140).

What happens at street level, in Oslo?

It is not easy to plan for cycling in a city and Oslo is no exception. The problem lies in the fact that the urban space is already occupied and although a bicycle lane along the edge of the road does not require too much space it is problematic if there is no extra room at all. Oslo is currently constructing a main bicycle path network and makes use of different solutions to complete the cycle routes. Bicycle lanes are most common, but there are also some projects going on with foot- and bicycle paths and plans of routes with bicycle paths and an additional sidewalk, where cyclists and pedestrians are separated.

Because there are many interests and different requirements to consider in a city it is difficult to arrange for something new. The most difficult parts of the main bicycle path network still remains in Oslo and especially road junctions or intersection are characterised by little facilitation because they are a real challenge to develop, but also because it is believed safer to not facilitate. Therefore arrangements usually do not continue through intersections, instead the cyclist must take on a role as a car which might be safer than making a solution where it looks like the cyclist has all the rights and ends up being mowed down by a car, as pointed out by an interviewee.

Segregation is used to allow cars and bicycles to travel at different speeds. In Oslo this only happens when it is possible to construct the required facilities, something which depends on available space, commercial interests and political will. Part of the reason that the development has been slow in Oslo might be that the political will has not been large enough to compensate for lack of space and conflicting interests. When integrating cars and bicycles, car drivers must adapt to the slower pace of cyclists. One of my interviewees pointed out that this seems to be a solution that is increasingly used: "I think there is a dawning understanding of things being too complicated, too multifaceted and too complex to manage to regulate. We are still carrying on trying to find enough space; pedestrians, parking, bicycle, bus and car and then you are to do the same thing on the other side. So we are still toiling within the ideology that everyone can have their own space. But the two things that are pointing in the other direction are mixed traffic in the street and lowering the speed limit"[16].

Oslo is opting for this solution in the inner city and as I mentioned earlier they have currently set the speed limit to 30 km/h. The actual speed is higher in many places however and cycling in the centre has not necessarily got all that more attractive. To increase the attractiveness it is necessary to do more than simply lowering the speed limit, like changing the relation between car drivers and cyclists for example. They are in many ways not conditioned to share the road both because of cyclists' lack of predictable behaviour and car drivers' lack of attention to and consideration for cyclists. There are many positive aspects to integrating cyclists with motorized traffic, but it should be done by taking the cyclist's viewpoint and not simply because it is the only solution.

[16] Interview with Marit Brandtsegg, NPRA, eastern region.

4.5 Conclusion

It is clear, but not that surprising that planning for cycling happens in relation to and subordinate to the existing car traffic. Planners look at the existing area and the amount of car traffic and then choose how to best accommodate bicycles. This is related to the deep-rooted conventional view that car traffic is more important and consequently slower modes of transport are subordinate. It is normal to look at safety in connection to transport from the viewpoint of motorized traffic. Therefore we regard walking and cycling as 'dangerous' rather than concluding that cars and trucks travel at unsafe speeds.

Forester's view that cyclists fare best when they act and are treated as drivers of vehicles, contradicts the common and accepted opinion about what needs to be done to improve cyclist's safety and thereby increase cycling. Although there are great differences between the culture of cycling in the US and in Norway bicycle paths or lanes are not necessarily safer here. Therefore, investigating the effects of the new infrastructure should be taken seriously. Moreover, policy makers and planners of bicycle infrastructure should be aware of the controversy between the different views. Knowledge about the role of cycling accidents, the way they happen and how to avoid them is insufficient and moreover commonly misinterpreted. No safety program can be effective unless it is based on the study of accidents and how to best avoid them.

Furthermore, the political character of different design solutions should be acknowledged. In this way different possibilities can be discussed as political options which are one of Peters' main points: "Putting design at the forefront of the analysis makes it possible to get around the deterministic assumptions underpinning most mainstream transport research. Instead, understanding mobility dilemmas as design problems imply that there is not just one 'best'

solution, but many, and therefore makes it possible to debate different design styles." (2006, p. 3).

5. The three perspectives in comparison

5.1 The interaction of policy makers, designers and cyclists

The three previous chapters have demonstrated how cycling's role in the mobility system is dependent on a range of factors and different actors. Being able to cycle can be thought of as a problem that has to be tackled, and the problem is approached by different actors. Cyclists make use of their skills and knowledge when they ride in traffic, policy makers make plans and take action to influence the situation and designers try to improve the infrastructure. In reality there is off course interaction between the different actors at different levels. Therefore, improving cycling's conditions depends not only on the various actors and their actions, but also on their cooperation and co-involvement.

The relationship between policy makers and designers of infrastructure for cycling is characterized by close interaction and mutual dependence. The reality is that the words "planning for bicycles" involve both politics and design. Planning and constructing new infrastructure always happen in relation to the political setting as the plans must be adopted by politicians. Besides, designers are public employees and therefore their job is to carry out the decisions made by politicians on national and local level. People planning and designing cycling infrastructure are either employed in the municipality or in the Norwegian public roads administration. Designers also have the possibility to influence the situation, especially because planning for cycling is a quite new field in Norway and the knowledge among politicians small.

The interaction between policy makers and cyclists is happening through the Norwegian national cycling association. The organization has been very active in their work to influence

and educate politicians. They cooperated with road authorities and policy makers in the making of both the national cycling strategy and the handbook for bicycle infrastructure. The national cycling strategy states that the organization represents the top user expertise relating to bicycle traffic and cycling and that it is crucial for this user expertise to be preserved and refined for the benefit of others working on matters relating to bicycle use (Nasjonal sykkelstrategi, 2003). Apart from the cycling association there is little connection between people planning for cyclists (both policy makers and designers) and the cyclists themselves.

It is an adequate question to ask whether cooperation between traffic planners and future users of new bicycle infrastructure is good enough. Sometimes the infrastructure is so bad that one wonder how much knowledge the planners actually had about cycling when designing it, as in the case of Torggata. In relation to the national cycling strategy one thing is done to improve this situation. The NPRA has published a guide for "cycling routes inspections"[17] as a foundation for the work to improve existing cycling routes. It is strongly recommended that at least one person with knowledge and experience from cycling is part of the inspection. The main objective of such and inspection is to map flaws and insufficiencies that can be fixed quickly (håndbok 249, 2004). When it comes to constructing new infrastructure there is no formal ties between users and the planners however. But involving cyclists in the planning process can be crucial for a good and safe design.

5.2 Innovation to increase cycling

One should not underestimate the last years' development in relation to cycling on the political and administrative level in Norway. It is good that something is finally done, but the real challenges are still ahead. To improve the conditions for cycling and get more people to

[17] In Norwegian: "sykkelveginspeksjoner"

start using their bicycle as a mode of transport, new thinking and innovation is necessary in order to solve the problems in the way of such a development.

Innovation must in part happen on a superior level. In order to solve a city's mobility problems, there is need to consider new ways to plan urban transport. Cycling should be included as part of a broad attempt to make the mobility system more sustainable. By using Peters' conceptual framework, with the construction of passages as a central part, it becomes possible to confront mobility problems in a way that opens up for new solutions. An important example of such an solution would be to put more emphasis on the problem of the meeting of different modes of transport. Passages should be constructed for the people who travel, which means that more focus should be on accomodating the traveller, not simply the mode of transport the traveller make use of. Cycling is an excellent way to travel in combination with public transport for example, but the connection between these modes of transport is to a large degree absent. This means that the traveller's passage is not allowed to continue, or put differently that the traveller do not have an opportunity to use a bicycle for part of the journey. This is especially a problem important to consider in relation to cycling as using bicycles as a mode of transport have natural limitations. When distances increase so does the possibility to make use of the bicycle. By creating coalitions between bicycles and other modes of transport, choosing the bicycle will become easier.

Innovation must also be directed at changing people's travel habits and attitudes towards using the bicycle as a mode of transport. This is a complicated task which is difficult to approach but very important. The challenge is to make cycling attractive and improve the bicycle's ability to compete with other modes of transport. That means doing more than improving safety, also other qualities are important. After all, car drivers do not choose the

car because that is the safest way to get somewhere, but because the car will get them to where they are going in time. Driving a car is convenient, reliable and fast. For the bicycle to compete with the car faster passages must be designed for the bicycle. This is very complicated as road space is contested by different interests. Thus, innovation in relation to design of the traffic landscape is necessary, this include experimenting and trials of new design solutions. Most importantly is to take the idea that design is politics into consideration. This implies that different design styles and ways to arrange the traffic landscape can be debated. Proposing different solutions and let the public decide on it, would be a better way to plan the traffic landscape than leaving the choice to the designers. After all traffic participants are not simply travellers, but also citizens (Peters, 2006, p. 156).

5.3 Conclusion

Improving the conditions for cycling in Norway is a complicated task and the challenges are many. Getting more people to cycle involves more than improving the infrastructure. The problems are present on different levels and involve various actors.

First, a changed political course is missing on a more superior level along with real political priority. Politicians are in favour of cycling, but there is no will to make unpopular political choices to decrease the use of cars, which is knowingly very important if you are to increase the use of bicycles. There is no discussing a future scenario without cars in the centre of Oslo for example. If government transport policy see road space primarily as corridors for motorized transport it is difficult to plan good passages for cyclists. Much can be gained if promoting cycling becomes part of a broader approach to promote a more sustainable society and city. An overall vision of a more sustainable mobility system with more cycling as part of the solution would create a better environment for change. Oslo lacks an integral mobility

plan where the city's different modes of transport are viewed together and not enough political attention is given to questions concerning sustainable mobility. On a local level the will and ability to implement the plans that are made need to be improved. Those who plan and design cycling infrastructure have to juggle between different interests all the time and they have to develop plans that they know will have a chance to get approved politically. Ground level changes are difficult to implement without support from the surrounding environment. More focus on the environmental aspects concerning mobility and de-stimulating car use can help in this respect.

Second, cultural aspects and attitudes towards cyclists and cycling must be improved. Cycling has not been appreciated and supported as a means of transportation in Norway. Now policy makers have put this on the agenda, the bicycle is to be used as a mode of transport. The problem is that the general public still think about the bicycle as a toy, less important and subordinated the "important" means of transport. Changing attitudes and behaviour towards sustainable modes of transport should be given more attention

Moreover, the behaviour and conduct among car drivers and cyclists, especially their relationship is not the best. They share the traffic landscape but are not accustomed and trained to do so. The fact that Norway started to change the conditions for cycling quite late makes the task harder because traditions, customs and practices support the existing situation. Negative attitudes towards cyclists by other traffic participants are common and can possibly become even worse with more cyclists on the road. An upward curve showing cycling's share of all travel might be hindered if these issues are not taken into consideration. The public need to gain a broader view on what and who a cyclist is.

Third, cyclists do not have their own role in traffic. There are two aspects to this problem; one is the cyclists' own behaviour. Many cyclists do not know how to ride a bicycle in traffic, their conduct is hard to interpret and they only partly follow the traffic rules. The other, is that the environment surrounding the cyclists adds to this situation. Other traffic participants do not acknowledge the cyclists, missing or poor infrastructure lead to wrong conduct and the way cyclists are supposed to act is not really clear and at least not obvious. Cyclists must learn their role in the traffic, but this is difficult as what their role is supposed to be is so unclear. Today their passages are too narrow and too wide at the same time. Therefore, efforts to do something about this situation must be directed at the two aspects of this problem simultaneously. For the cyclists' part they must realize that with more rights come more duties.

Fourth, when planning and designing infrastructure for cycling motorized traffic is taken as the point of departure. Politics is very much present in the design of the traffic landscape. The design is the outcome of what the planner is able to do within the given framework. Therefore it is done pursuant to the traffic and infrastructure that already exists. The changes are made in relation to the existing system, a system where cars have the main rights and no real challengers to their position. Furthermore, the knowledge about cycling accidents in relation to different kind of infrastructure is not good enough. The effects of new infrastructure should be investigated, both in relation to accidents and whether cyclists' comprehension of how to use new infrastructure is good enough.

Improving the conditions for cycling can be important in order to create a sustainable mobility system. Currently, the solution proposed by policy makers in Norway and Oslo is improving the infrastructure for cyclists. The problems related to cycling are complex, however,

therefore a wider approach is needed if we are to solve them. Furthermore, thinking about cycling's role in the traffic system in new ways can be crucial if policy makers are to succeed with their goal of 50 % more cycling.

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Appendix A. List of interviewees

Trond Berget,
Leader of the Norwegian National Cycling Association

Marit Brandtsegg,
Bicycle coordinator in Eastern Region, NPRA.

Anders Dalen,
Leader of the group formulating the Norwegian cycling Strategy, chief engineer, the Directorate of Public Roads, NPRA.

Gyda Grendstad,
Working with cycling, the Directorate of Public Roads, NPRA

Hege Gultvedt,
Bicycle planner, district of Oslo, NPRA.

Aslaug Vassbotn,
Bicycle planner, the Agency for Road and Transport in the Municipality of Oslo

Appendix B. Norwegian titles

Organizations:

The Agency for Road and Transport	Samferdselsetaten
The Agency for Planning and Building services	Plan og Bygningsetaten
The Directorate of Health and Social Affairs	Sosial- og helsedirektoratet
The Norwegian Association of Local and Regional Authorities	Kommunenes Sentralforbund
The Directorate of Public Roads	Vegdirektoratet
The Norwegian Public Roads Administration	Statens Vegvesen
The National Cycling Association	Syklistenes Landsforening

Plans and Infrastructure in relation to cycling:

National Cycling Strategy	Nasjonal Sykkelstrategi
Cycling Strategy for Oslo	Sykkelstrategi for Oslo
The main bicycle path network in Oslo	Hovedsykkelvegnettet i Oslo
Bicycle lane	Sykkelfelt
Bicycle path	Sykkelveg
Foot and Bicycle path	Gang og Sykkelveg